IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: David Baggett et al.	Art Unit	: 3626
Serial No.	: 09/431,674	Examiner	: Porter, Rachel L.
Filed	: November 1, 1999	Conf. No.	: 9072
Title	: AVAILABILITY PROCESSING IN A TRAVEL PLANNING SYSTEM		

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BRIEF ON APPEAL

Please charge the brief fee of $500 to Deposit Account No. 06-1050.

(1) Real Party In Interest

The real party in interest in the above application is ITA Software, Inc.

(2) Related Appeals and Interferences

The appellant is not aware of any appeals or interferences related to the above-identified patent application.

(3) Status of Claims

This is an appeal from the decision of the Primary Examiner in an office action dated April 20, 2006, finally rejecting claims 1-34, all of the claims in the application. Appellant filed a Notice of Appeal on July 10, 2006.

(4) Status of Amendments

Appellant filed a Request for Reconsideration in reply to the Final Office Action. All previously filed amendments have been entered.

(v.) Summary of Claimed Subject Matter

Claim 1

Appellant's claim 1 is directed to a travel planning system. "Referring now to FIG. 1, a travel planning system 10 is shown." [FIG. 1 and Appellant's Specification Page 4, lines 11-12]

Inventive features of Appellant's claim 1 include a computer system that includes a processor and a memory storing processes for executing on the processor including a scheduling process to provide a set of instances of transportation that satisfy a user query. "It includes a server computer 12 having a computer memory or storage media 14 storing a server process 15. The server process 15 includes a scheduler process 16 ... ." [FIG. 1 and Appellant's Specification Page 4, lines 16-18].

Inventive features of Appellant's claim 1 also include an availability process that accesses seat availability information from multiple sources of seat availability information, receives the instances of transportation and uses results from a first source of the multiple

sources of seat availability information for a mode of transportation to determine a set of instances of transportation for which a seat is available from the received instances of transportation. "Referring to FIG. 3, a process 70a for checking availability involves using multiple sources of availability information." [Appellant's Specification Page 9, lines 1-3]. When the process 70a determines that all results or a portion of the results are reliable, it send(s) the results to the travel planning system." [FIG. 1 and Appellant's Specification Page 9, lines 11-13]

An inventive feature of Appellant's claim 1 also determines quality properties of the availability information from the first source of seat availability information, with the quality properties including at least one of confidence, precision and validity. "The different sources 65, 66 each have different properties, including the cost (in time, computation, communication, or money) of performing a query and the quality (age/freshness, confidence, precision, or validity). Sometimes all costs are negligible, such as when querying a cache; other times the costs are substantial, such as when submitting live queries directly to the airlines (costly in time, communication, and money since the airlines often charge a transaction fee). When a source is expensive, it is desirable to contain these costs." [Appellant's Specification Page 8, lines 23-32]

Another inventive feature of Appellant's claim 1 determines, based on the quality properties, whether the first source of seat availability information is reliable, and if the results are not reliable, the availability process executes a second set of seat availability queries to the first source or a different one of the multiple sources of seat availability information based on the outcome of determining quality properties, to provide a second set of instances of transportation for which a seat is available. "Referring to FIG. 3, a process 70a for checking availability involves using multiple sources of availability information. Process 70a queries multiple sources sequentially. Process 70a submits 72 all queries to a first source. Process 70a determines 74 if results from the availability source are reliable. If the results are not reliable, the process 70a selects 76 a subset of the queries to send to a subsequent availabilty (sic) source. The process 70a selects the subset based on the results returned and other factors. The process 70a selects 78 another source and sends 80 the subset of queries to the other source. When the process 70a determines that all results or a portion of the results are reliable, it send(s) the results to the travel planning system." [Appellant's Specification Page 9, lines 1-13].

Claim 15

Claim 15 is directed to a computer program product embodied on a computer readable medium for use with a travel planning system for determining availability of a seat for a mode of transportation. "Referring to FIG. 2, an availability process that is part of the travel planning system 10 is shown." [Appellant's Specification Page 6, lines 10-11].

Inventive features of Appellant's of claim 15 include instructions to receive a set of instances of transportation that satisfy a user query. "The set of pricing solutions 38 is obtained from the server 12 in response to a user request sent from the client to the server 12." [Appellant's Specification Page 5, lines 30-32].

Inventive features of Appellant's of claim 15 also include instructions to determine quality of a first set of seat availability information from a first source of availability information to guide a travel planning system to determine a subsequent set of instances of transportation for which a seat is available, "Once that is completed the process 70c iteratively checks availability 106 guided by faring and prior availability results. The process 70c perform(s) the subsequent availabilty (sic) checks 108 using higher quality availability sources. After the final check it can have a final faring process guided by all of the results." [Appellant's Specification Page 16, lines 23-28]. This feature also requires that if the quality of the seat availability information is low, execute a second set of seat availability queries to the first source or a different source of seat availability information to provide a second set of seat availability information from the first source or the different source of seat availability information. "The process 70a sends a query to a second source, for instance, when the first source had no information or had a low confidence rating for its information about that query. Typically, the first sources are lower cost, lower quality sources, while the last sources are more expensive, higher quality sources." [Appellant's Specification Page 9, lines 14-19].

Inventive features of Appellant's of claim 15 also include instructions to produce from the second set of seat availability information and a set of the instances of transportation, a set of instances of transportation, for which a seat is available. "The answers after the first faring pass is completed are imperfect because the cached availability data is expected to be imperfect. However, since the cached data is a reasonable approximation of the true availability, the faring results are a reasonable approximation of the true prices, and this heuristic provides a good

priority ordering of the legs which allows the system to produce answers which have a high confidence of being correct. This comes at the extra computational cost of performing the faring process twice." [Appellant's Specification Page 12, lines 24-32].

Claim 21

Claim 21 is directed to a method executed in a computer system for determining availability of a seat for a mode of transportation. [FIG. 1 and Appellant's Specification Page 4, lines 11-12].

Inventive features of Appellant's of claim 21 include producing in the computer system a first set of seat availability queries, to send to a first source of seat availability information for a first set of instances of transportation. "Once that is completed the process 70c iteratively checks availability 106 guided by faring and prior availability results. The process 70c perform[s] the subsequent availabilty (sic) checks 108 using higher quality availability sources. After the final check it can have a final faring process guided by all of the results." [Appellant's Specification Page 16, lines 23-28].

Inventive features of Appellant's of claim 21 also include evaluating in the computer system a quality measure of seat availability information received from the first source of seat availability information, to guide a travel planning system in determining a set of instances of transportation for which a seat is available. "The process 70a sends a query to a second source, for instance, when the first source had no information or had a low confidence rating for its information about that query. Typically, the first sources are lower cost, lower quality sources, while the last sources are more expensive, higher quality sources. Not all queries will be submitted to all sources because of prohibitive cost. When the process 70a has availability information for a leg from more than one source, it uses the data gathered from the highest quality source." [Appellant's Specification Page 9, lines 14-22].

Inventive features of Appellant's of claim 21 also include producing in the computer system a second set of seat availability queries, to send to a different source of seat availability information based on evaluating quality of the availability information to provide the set of instances of transportation for which a seat is available. "If the results are not reliable, the process 70a selects 76 a subset of the queries to send to a subsequent availabilty source. The

process 70a selects the subset based on the results returned and other factors." [Appellant's Specification Page 9, lines 6-9].

(vi.) Grounds of Rejection to be Reviewed on Appeal

1. Claims 11-13 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

2. Claims 1-4, 11, 13, 15, 16, 19, 21-23, 26 and 29-32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over by Lynch et al (US Patent No. 6,119,094).

3. Claims 5-8, 10, 18, 20, 25, and 27 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch '094 in view of Lynch et al (US Patent No. 5,839,114).

4. Claims 9, 17 and 24 stand rejected under 35 U.S.C. 103(a), as being unpatentable over Lynch '094, in view of Walker et al. (US Patent No. 5,897,620).

5. Claims 12 and 33-34 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch '094 in view of Hornick (US Patent No. 5,270,921).

6. Claim 14 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch '094 in view of Slotznick (US 5,983,200).

7. Claim 28 stands rejected under 35 U.S.C. 103(a) as being unpatentable over by Lynch et al (US Patent No. 6,119,094) in view of Official Notice.

(7) Argument

Indefiniteness

The second paragraph of 35 U.S.C. §112 second paragraph requires that the specification conclude with one or more claims that particularly point out and distinctly claim the subject matter that the applicant regards as his invention.

It is not necessary for the claims to recite every element needed for practical utilization of the claimed subject matter in order for a claim to be proper under 35 U.S.C. §112, second paragraph. *Bendix Corp. v. United States*, 600 F.2d 1364, 1369, 204 U.S.P.Q. 617, 621 (Court of Claims, 1979) and *Miles Laboratories, Inc. v. Shandon, Inc.*, 997 F.2d 870, 27 U.S.P.Q. 2d, 1123 (Federal circuit, 1993). It is not the role of the claims to enable one skilled in the art to reproduce the invention, but rather to define the legal metes and bounds of the invention. *In re*

Geoffe, 526 F.2d 1393, 1397, 188 U.S.P.Q. 131, (CCPA, 1975). The claims need not provide all operating details but a method claim should recite a positive step. *In re Erlich*, 3 U.S.P.Q. 2d 1011 (Bd. Pat. App. & Int., 1986).

Obviousness

"It is well established that the burden is on the PTO to establish a prima facie showing of obviousness. *In re Fritsch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (C.C.P.A., 1972)."

"It is well established that there must be some logical reason apparent from the evidence or record to justify combination or modification of references. *In re Regal*, 526 F.2d 1399 188, U.S.P.Q.2d 136 (C.C.P.A. 1975). In addition, even if all of the elements of claims are disclosed in various prior art references, the claimed invention taken as a whole cannot be said to be obvious without some reason given in the prior art why one of ordinary skill in the art would have been prompted to combine the teachings of the references to arrive at the claimed invention. Id. Even if the cited references show the various elements suggested by the Examiner in order to support a conclusion that it would have been obvious to combine the cited references, the references must either expressly or impliedly suggest the claimed combination or the Examiner must present a convincing line of reasoning as to why one skilled in the art would have found the claimed invention obvious in light of the teachings of the references. *Ex Parte Clapp*, 227 U.S.P.Q.2d 972, 973 (Board. Pat. App. & Inf. 985)."

"The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Gordon*, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

> Although the Commissioner suggests that [the structure in the primary prior art reference] could readily be modified to form the [claimed] structure, "[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Laskowski*, 10 U.S.P.Q. 2d 1397, 1398 (Fed. Cir. 1989).

"The claimed invention must be considered as a whole, and the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of

making the combination." *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick*, 221 U.S.P.Q. 481, 488 (Fed. Cir. 1984).

> Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under Section 103, teachings of references can be combined only if there is some suggestion or incentive to do so. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984) (emphasis in original, footnotes omitted).

"The critical inquiry is whether 'there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.'" *Fromson v. Advance Offset Plate, Inc.*, 225 U.S.P.Q. 26, 31 (Fed. Cir. 1985).

(1) Claims 11-13 particularly point out and distinctly claim the subject matter of Appellant's invention within the meaning of 35 U.S.C. 112, second paragraph.

The examiner rejected Claims 11-13 under 35 U.S.C. 112, second paragraph, as being indefinite. The examiner contends that:

> **"the availability process determines travel options using availability data has been determined to be "low-quality" and treats this data as though it were "high quality" data, is unclear to the Examiner in how this phrase further limits claim 1, or how one set of data is treated as though it were another set of data in this claim. In particular, it is unclear what the applicant means "low-quality data" and "high-quality data" and how the system/method would process these data in a similar or differential manner.**

Appellant's claims 11-13 are definite within the meaning of 35 U.S.C. 112, second paragraph. One of ordinary skill in this art would readily understand the metes and bounds of Appellant's claims and specifically the meaning of the availability process determining travel options using availability data that has been determined to be "low-quality" and treating this data as though it were "high quality" data. One of ordinary skill in the art would understand that some sources of seat availability data produce better answers or predictions of answers than

others. Those that are better one of ordinary skill would deem to "high quality," whereas those that are not as good would be viewed as "low quality." For the recited feature of claim 11, the claim treats the data during processing of travel option as if that data were high quality data, to provide some potential improvement in processing performance.

Therefore, claim 11 clearly further limits claim 1 since it varies the processing that would otherwise occur from claim 1, as would be understood by one of ordinary skill in the art. Nevertheless, if one of ordinary skill in the art needed assistance in understanding these features of "low-quality" and "high quality" data, such person could consult the numerous passages in Appellant's specification that discuss this approach. For instance, Appellant states:

> The different sources 65, 66 each have different properties, including the cost (in time, computation, communication, or money) of performing a query and the quality (age/freshness, confidence, precision, or validity). Sometimes all costs are negligible, such as when querying a cache; other times the costs are substantial, such as when submitting live queries directly to the airlines (costly in time, communication, and money since the airlines often charge a transaction fee). When a source is expensive, it is desirable to contain these costs. [Appellant's Specification Page 8, lines 23-32].

Thus, one of skill in the art would understand that low quality is, e.g., where the quality (age/freshness, confidence, precision, or validity) is not as good as a source with higher quality, e.g., (age/freshness, confidence, precision, or validity). How one set of data is treated as though it were another set of data would also be within the skill of one in the art. For example Appellant also describes that:

> The ordering process ordering of operations for an "After Faring" strategy is shown. The process determines legs of using a scheduler and determines fares using a faring process. The process makes use of the low-quality low-cost source of availability information, assume every seat is available in every booking class. Computation proceeds as if the low-quality speculatively guessed data were high quality, in the sense that the origin of the data does not affect the computational processes. This process uses speculative computation 105 to determine results. Instead of

> spending the cost to acquire and process actual answers, the system speculates 105 as to what the answers might be and expends computation to ascertain what the results would be were the speculation true. [Appellant's Specification Page 17, lines 2-14].

Thus, in this example Appellant teaches to use the low quality speculatively guessed data as if it were high quality data, to provide some overall computational benefits. Accordingly, the claims are definite and define the subject matter that Appellant considers to be his invention.

(2) Claims 1-4, 11, 13, 15, 16, 19, 21-23, 26 and 29-32 are patentable over by Lynch et al ('094).

Claims 1, 22, 26 and 29-32

For the purposes of this appeal only, claims 1, 22, 26 and 29-32 stand or fall together. Appellant's claim 1 is representative of this group of claims.

Claim 1 is directed to a travel planning system. Claim 1 is neither described nor suggested by Lynch '094. Specifically, Lynch '094 fails to suggest ... an availability process that accesses seat availability information from multiple sources of seat availability information, ... determines quality properties of the availability information from the first source of seat availability information ... and ... determines, based on the quality properties, whether the first source of seat availability information is reliable, and if the results are not reliable, the availability process executes a second set of seat availability queries to the first source or a different one of the multiple sources of seat availability information based on the outcome of determining quality properties, to provide a second set of instances of transportation for which a seat is available.

Appellant's claim 1 is directed to a technique to handle seat availability queries for travel planning. As described by Appellant in the specification:

> A travel planning system makes use of many classes of information including scheduling, faring, and availability data. The scheduling data describes where and when a passenger may travel; the faring data defines how much a given travel itinerary will cost; and the availability data describes the travel provider's

willingness to sell the travel for the given cost. [Appellant's Specification Page 1, lines 5-10].

Appellant also describes that: "Conventional travel planning systems begin travel planning by choosing a small number of flights, checking availability for the flights by querying the airline's yield management system directly, and then faring the available seats. They have no other source of seat availability information to query, and make no other use of the availability information than to eliminate the unavailable booking classes of the few preselected flights from further consideration." [Appellant's Specification Page 1, lines 22-29]. Accordingly, Appellant's invention in general, uses multiple sources of seat availability information. Due to the low cost associated with querying some sources of seat availability information, it is practical to make multiple sets of queries to availability sources.

The examiner considers that Lynch '094 teaches

> **... an (availability) component to search/access seat availability information from multiple sources of seat availability information, receives the instances of transportation and uses the results from a first source of multiple sources of seat availability information for a mode of transportation to determine a set of travel options (i.e. instances of transportation) (col. 6, lines 41-56; col. 7, lines 8-20; lines 29-32; col. 9, line 47-col. 10, line 5)**
>
> **determines quality properties of the availability information from the first source of seat availability information, with the quality properties including at least one of confidence, precision, and validity (column 2, lines 60-65; figure 3, column 6, lines 11-57, col. 7, lines 46-49)**
>
> **determines, based on quality properties, whether the first source of seat availability information reliable, and if the results are not reliable, the availability process executes a second set of availability queries to the first or a different one of the multiple sources of seat availability information based on the outcome of determining quality properties to provide a second set of instances of transportation for which seat is available. (See Lynch'094: col. 2, lines 60-65; col. 6, lines 22-38; Figure 3)**

Appellant contends that Lynch '094 fails to describe or suggest claim 1, whether at col. 6, lines 41-56; col. 7, lines 8-20; lines 29-32; col. 9, line 47-col. 10, line 5 or elsewhere. Lynch at Col. 6, lines 11-57 discuss updating that occurs if a predetermined time has elapsed and inventory information.

Lynch discloses a "so called" inventory update sub-module as: "an inventory update sub-module, preferably functions to direct system 10 to periodically access and retrieve inventory information from one or more computer reservation systems 24 used by the travel agency."

Appellant contends that at best it is unclear whether the inventory information specifically includes seat availability data. As described by Lynch at Col. 4, lines 6-22:

> **Inventory data structure 18 includes inventory information obtained from one or more computer reservation systems 24 used by the travel agency. The customer reservation systems 24 provide travel service inventory information, such as airline flight, hotel, and rental automobile availability and rates. For airline flights, the inventory information may specify all flights between each particular city of departure and city of destination (otherwise known as a "city pair"), the arrival and departure times of the flights, the airline carriers providing such flights, a description of each flight as either direct or non-direct, the breakdown of all non-direct flights into separate legs or "segments," the identification of each segment of a flight as either domestic or international, the fare classes available on the flights, and pricing information (e.g., one-way ticketing, round-trip ticketing, city-to-city ticketing, or end-to-end ticketing) that can be used to determine the rates of various flights.**

While Lynch '094 mentions "the fare classes available on the flights, and pricing information," Lynch '094 does not specifically describe that data as "seat availability information." Appellant contends that Lynch does not specifically recognize seat availability and thus mentions "the fare classes available on the flights" could just as likely refer to showing what fare classes are permitted on particular flights, in contrast to the specific seat availability data. Therefore Appellant contends that Lynch '094 does not explicitly disclose seat availability data.

In any event, assuming *arguendo* that Lynch '094 discloses seat availability, claim 1 still distinguishes over Lynch, since claim 1 requires ... an availability process that accesses seat availability information from multiple sources of seat availability information ... determines quality properties of the availability information from the first source of seat availability information and determines, based on the quality properties, whether the first source of seat availability information is reliable.

Appellant contends that the examiner fails to show that Lynch '094 discloses that a computer reservation service uses a source of seat availability information that originates from something other than airline yield management system (also known as a revenue management system). Rather, it is clear that to the extent the Lynch '094 can be assumed to discuss "seat availability" data, that data has but one quality since the airline yield management system or revenue management system are the known, correct sources of seat availability data.

Finding a different type source for the seat availability data however would be inconsistent with the teachings in Lynch '094, namely: "Inventory data structure 18 includes inventory information obtained from one or more computer reservation systems 24 used by the travel agency." [Col. 4, lines 6-11], as well as Walker '620 and Hornick (applied to later claims).

Therefore, in so sense can the examiner properly argue that Lynch '094 "determines quality properties of the availability information from the first source of seat availability information and determines, based on the quality properties, whether the first source of seat availability information is reliable. It would be illogical to modify Lynch '094 to determine quality properties of the availability information or determine whether the first source was reliable, because it would have no benefit to Lynch'094, since Lynch '094 receives the seat availability data known to have the highest quality from the known reliable sources CRS's, assuming that Lynch indeed disclosed seat availability data in the first instance.

The examiner argues in essence that by accessing different CRS's that Lynch '094 discloses, e.g., first and second sources. However, to the extent that we *assume* that the CRS's deal with seat availability data at this juncture and that Lynch '094 accesses such data, the data is again from the same source types namely yield or revenue management systems of airlines, all known to have the same quality data. Therefore, Lynch '094 inherently does not teach to "determine, based on the quality properties, whether the first source of seat availability information is reliable," since it is already known to be reliable.

Further it would also follow that Lynch '094 would not suggest that: "and if the results are not reliable, the availability process executes a second set of seat availability queries to the first source or a different one of the multiple sources of seat availability information based on the outcome of determining quality properties, to provide a second set of instances of transportation for which a seat is available." Nowhere does Lynch describe that a second set of availability data are obtained from the CRS's and used to provide a second set of instances of transportation, as a result of a determination that the data was not of sufficient quality or that the source was not reliable. Lynch '094 arguable teaches to update data on a schedule determined by the system, but clearly does not suggest to provide a second set of instances of transportation, as a result of a determination that the data was not of sufficient quality or that the source was not reliable.

Claim 2

Appellant's claim 2 serves to further limit claim 1 by reciting that "if the availability process determines that the first source of seat availability information is reliable, the availability process returns the results." In contrast, Lynch '094 at block 220, outputs the table of alternate low-cost travel arrangements to a user of the system by displaying the table on a workstation 36, after the process at block 218 generates the pricing table. However, nowhere does Lynch '094 suggest that outputting of the pricing table results from determining the reliability of the seat availability information.

Claims 3 and 4

For the purposes of this appeal only, claims 3 and 4 stand or fall together. Appellant's claim 3 is representative of this group of claims.

Appellant's 3 limits claim 1 and adds the feature that ... the availability process makes multiple, sequential seat availability queries to the first source or a different one of the multiple sources of seat availability information. Lynch '094 does not disclose any availability process that makes any queries to sources of seat availability information. Appellant contends that Lynch '094 does not deal with seat availability data per se and therefore would not suggest these features.

Claims 11 and 13

For the purposes of this appeal only, claims 11 and 13 stand or fall together. Appellant's claim 11 is representative of this group of claims.

Claim 11 is directed to an availability process that speculatively determines the travel options using availability data that is determined to be low-quality data as though the data were high-quality data.

The examiner considers that Lynch '094 teaches speculatively determining travel options using low quality availability data as though it were high quality data. To the extent that Lynch teaches that CRS's provide seat availability data, Appellant contends that the examiner has failed to show that such data would be anything other than the actual seat availability data provided from revenue management systems of airlines. However, the "quality" of that data is of only one

quality, the highest quality. On the other hand, Appellant discloses many secondary sources of seat availability data including a cache and various prediction or simulation techniques to obtain seat availability data. These sources differ in costs (computation, speed and monetary) associated with obtaining the data and reliability or quality of the data.

Lynch '094 does not discuss processing by speculatively determining travel options using the low quality data as if it were high quality data. The examiner argues that: "the genetic algorithms are used to develop a variety of possible travel options (speculative travel options) based loosely upon a user's travel request, (col. 7, lines 29-45)." However, the passage relied on by the examiner merely discusses that the genetic algorithms can produce a set of parameters that can identify travel arrangements. Neither in that passage nor elsewhere does Lynch '094 characterize the travel options as "based loosely upon a user's travel request." Also, neither in that passage nor elsewhere does Lynch '094 suggest speculatively determining travel options using low quality data as if it were high quality data. This conclusion follows because Lynch '094 does not determine quality of the seat availability data in the first instance.

However, even if updating of the database of Lynch '094 were considered as recognition of "quality of availability data," Lynch '094 does not suggest using low quality data, i.e., old data before the update, when Lynch '094 has, "high quality data", i.e., new data after the update stored in the database. Lynch '094 only suggests using the most current data. It would be illogical to modify Lynch to make use of low quality data when high quality data is present.

Thus, to interpret Lynch '094 as suggesting the features of claim 11 is completely illogical since it would change the principal of operation of Lynch and only serves to make Lynch '094 less effective. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Claims 15, 21

For the purposes of this appeal only, claims 15 and 21 stand or fall together. Appellant's claim 15 is representative of this group of claims.

Claim 15 is directed to a computer program product ... for determining availability of a seat for a mode of transportation. Claim 15 includes the feature of instructions to receive a set of instances of transportation that satisfy a user query. In addition, Claim 15 includes instructions to determine quality of a first set of seat availability information from a first source of availability information.

For the reasons discussed above Appellant contends that Lynch '094 neither describes nor suggest seat availability data, nor determine quality of the seat availability data nor that the determined quality is used to guide a travel planning system to determine a subsequent set of instances of transportation for which a seat is available ... ."

The examiner reasons that: "In the method disclosed by Lynch, the update module may update the stored availability data by querying the one or more of the CRS's if the stored data if the predetermined time period has elapsed." The examiner equates this to Appellant's feature of "execute a second set of seat availability queries to the first source or a different source of seat availability information to provide a second set of seat availability information from the first source or the different source of seat availability information," despite that Lynch '094 has no feature that specifically evaluates the quality of the availability data in order to determine whether or not to send another set of availability queries.

The examiner also argues that: "[Furthermore,] the system of Lynch '094 repeatedly updates availability data stored in the inventory database tests the fitness of solutions, and sifts through a plurality of candidate pools (i.e. multiple sets of transportation information) to identify a plurality of low-cost travel arrangements (col. 6, lines 41-61)." However, repeatedly updating availability data is a problem that Appellant's invention seeks to avoid, since querying for actual availability data has associated monetary as well as computational costs, as explained by Appellant in the specification.

The examiner however acknowledges that: "Lynch '094 does not expressly disclose whether the system queries the same or different source(s) of seat availability information, but the system does repeatedly query various sources for seat availability data (i.e. first, second, third... nth sets of queries), (col. 6, lines 22-38), thus generating multiple sets (i.e. subsequent sets) of transportation information, (col. 6, lines 22-38)." Indeed, the examiner equates various sources with sets of queries, "(i.e. first, second, third... nth sets of queries)." This of course is

incorrect, since "sources of availability" and "queries" are different. Nonetheless, it is clear, that to the extent that Lynch '094 teaches availability data, it only teaches CRS's, as an undisclosed source of seat availability data.

The examiner's motivation to modify Lynch '094 to query different sources is that:

> **At the time of the Applicant's invention, it would have been obvious to one of ordinary skill in the art to query one or more different sources of seat availability information (i.e. sources of higher quality) if the results from the first are of low quality (i.e. unreliable). As suggested by Lynch'094, one would have been motivated to do this to maximize the likelihood that the system will identify a plurality of (low-cost) travel arrangements to be offered to a customer while minimizing the involvement of a travel agent, (col. 1, lines 66-col. 2, line 2, lines 19-22).**

Appellant contends that this is a mere application of hindsight, since the reference neither describes availability data nor different sources of availability data, nor that different sources of availability data have different levels of quality. Rather, the examiner has improperly used Appellant's claim as a roadmap to piece together reasoning to address the subject matter of the claim. "It is difficult but necessary that the decision maker forget what he or she has been taught . . . about the claimed invention and cast the mind back to the time the invention was made ... to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art." *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

The examiner's motivation is also inadequate, since it is not the point of claim 15 to minimize the involvement of a travel agent, since the travel agent is not making the availability queries.

Claim 16, 23

For the purposes of this appeal only, claims 16 and 23 stand or fall together. Appellant's claim 16 is representative of this group of claims.

Claim 16 further limits claim 15 and includes instructions to send the second set of seat availability queries to a different higher quality source of seat availability information if the results from the first source are low quality. Lynch '094 neither determines quality of seat availability data nor that sources of seat availability data have different quality levels. Therefore,

Lynch would not suggest to send the second set of seat availability queries to a different, higher quality source of seat availability information if the results from the first source are low quality.

The examiner acknowledges here, as in the rejection of claim 15, that Lynch '094 does not teach that the system discloses different sources of seat availability, but again argues that it would be obvious, using the same rationale as in claim 15. However, this rationale is illogical, as pointed out above, since if Lynch '094 is directed to finding travel solutions as the examiner contends, then Lynch '094 would not have any basis to query a different source for a set of travel options, since the only sources that Lynch disclosed as different sources are different CRS's, which presumably have the same quality of availability data, i.e., the actual availability data from the revenue management system.

Claim 19

Claim 19 distinguishes since nowhere does Lynch '094 discuss that the multiple sources of seat availability information generate seat availability information with differing quality properties including at least one of freshness, confidence, precision, and validity. The examiner contends that ... Lynch '094 teaches ...the multiple sources of seat availability information generate seat availability information with differing quality properties including at least one of freshness, confidence, precision, and validity." The examiner bases this reasoning on Lynch's discussion that the time that has elapsed since the inventory data was obtained varies for the sources, especially when the sources are queried sequentially (Figure 3, column 6, lines 11-17).

Lynch '094, discusses querying sources sequentially or concurrently. However, querying the sources sequentially does not make one source have data that is less fresh, since the data will always be as fresh as it can be when it is queried from the source disclosed in Lynch '094. Lynch '094 schedules the queries not based on the data or the sources, but based on: "whether a predetermined time has elapsed since inventory information was last obtained from computer reservation systems 24. Preferably, the predetermined time can be set by a user of the system according to the user's needs." [Lynch '094: Col. 6, lines 10-14].

(3) Claims 5-8, 10, 18, 20, 25, and 27 are patentable over Lynch '094 in view of Lynch et al (US Patent No. 5,839,114).

Claim 5-8, 10, 18, 20, 25 and 27

For the purposes of this appeal only, claims 5-8, 10, 18, 20, 25 and 27 stand or fall together. Appellant's claim 5 is representative of this group of claims.

Claim 5 distinguishes over the combination of Lynch '094 and Lynch '114, since no combination of these references describes or suggests that: "multiple sources of seat availability information have differing fixed and marginal costs associated with obtaining information, including computation, communication, time, and monetary cost."

The examiner contends that Lynch's '114 discussion of contractual relationships among CRS's and travel agents suggests this feature. However, Appellant contends that the teaching in Lynch '114 is unrelated to the claimed feature. Moreover, the combined references only address one such cost, monetary. The claim requires "multiple sources of seat availability information have differing fixed and marginal costs associated with obtaining information, including computation, communication, time, and monetary cost." That is, claim 5 requires multiple costs. Nowhere in Lynch '094 or '114 are these other costs addressed.

(4) Claims 9, 17 and 24 are patentable over Lynch '094, in view of Walker et al. (US Patent No. 5,897,620).

Claims 9, 17 and 24

For the purposes of this appeal only, claims 9, 17 and 24 stand or fall together. Appellant's claim 9 is representative of this group of claims.

Claim 9 limits the first source or a different one of the multiple sources of seat availability information to a source of predicted availability information .... As Appellant notes in the specification,

> The process 70a first uses a cache or other predictive type source 66 to provide an initial set of queries and then performs a

> live query to airline yield management or availability systems 65. The cache queries are quick and cheap to perform, but can have stale or incorrect data. The live queries are expensive. Therefore, only a few can be made per travel planning session. However the live queries are up-to-date and correct. [Appellant's Specification Page 10, lines 5-11].

Lynch '094 does not describe the features of claim 1, as explained above. The examiner uses Walker to teach that one of the sources of availability data are sources of predicted availability information. The examiner reasons that: "Walker teaches that the use of forecasted inventory data (i.e. predicted availability information) from a predicted availability source (e.g. RMS) for arranging and pricing travel/ transportation options is well known in the art. (col. 6, lines 9-26)."

Appellant contends that one of ordinary skill in this art would not view Walker as disclosing a predicted availability source. Instead, one of ordinary skill would recognize Walker as referring to the RMS system as the actual source of availability data obtained by querying the source for an availability answer. This is consistent with a reading of Walker "For the actual flights, the RMS 200 will monitor the actual demand within each fare class relative to the forecasted demand to dynamically reevaluate the inventory allocated to both the actual flights and the special fare listing." [Walker Col. 5, lines 16-19] and Appellant's specification, "The availability process 70 runs on the server 12 and access an availability system 66 of one or more airlines (generally each airline will have its own availability system) by sending availability queries over the network 22 (FIG. 1)." [Specification page 8, lines 9-12].

While Walker indeed attempts to forecast demand in devising a scheme to answer availability queries, Appellant's claim requires an availability predictor to predict at any moment in time how that RMS system of an airline would respond to an availability query in order to avoid the time and computational expense associated in directly querying the RMS system.

The examiner's proffered motivation that: "... it would have been obvious to one of ordinary skill in the art to include predicted availability information (i.e. forecasted inventory data) among the availability sources queried to determine a set of potential travel options for a user in the system of Lynch '094.", must necessarily fail, because Walker does not in fact teach any sources that predict seat availability. In addition, the examiner's reasoning that: "One

would have been motivated to include forecasted inventory data to permit travel service providers airlines) to post travel information for users to review and/or select while minimizing system downtime required by constant updates with real-time availability data.", is erroneous, since forecasted inventory data is the province of the system that provides the availability data, not some prediction of the availability data, as the examiner seems to urge.

Claims 17 and 24 also require sources of predicted seat availability information and are allowable for analogous reasons.

(5) Claims 12 and 33-34 are patentable over Lynch '094 in view of Hornick (US Patent No. 5,270,921).

Claim 12

Claim 12 recites that the travel planning system ... produces the low-quality, availability data, which are not returned from any external source of availability information, but are guessed or computed internal to the travel planning process.

Claim 12 is allowable over Lynch '094 taken with Hornick since neither Hornick nor Lynch teach that the travel planning system speculatively determines travel options as in base claim 11.

Moreover, the examiner acknowledges that Lynch fails to teach that the availability information are guessed or computed internal to the travel planning process and relies on Hornick. Hornick does not teach a travel planning process but instead describes a revenue management system algorithm, again a variation of Walker in which Hornick teaches the actual availability algorithm that Walker seeks to modify.

As Appellant has consistently argued, a prior art travel planning system would access a Hornick like availability system to obtain the seat availability data. However, no combination of these references suggest the claimed limitation that: "... the low-quality, availability data, which are not returned from any external source of availability information, but are guessed or computed internal to the travel planning process." The combination of Lynch '094 and Hornick would merely have the person of ordinary skill complete the disclosure of Lynch '094 to have Lynch's travel planning system access Hornick's availability system for the availability data that

Lynch '094 fails to describe. The combination would not suggest to have the "the low-quality, availability data guessed or computed internal to the travel planning process," since none of the references suggest the desirability of using predicted availability data.

Claim 34

For the purposes of this appeal only, claims 33 and 34 stand or fall together. Appellant's claim 34 is representative of this group of claims.

Claim 34 further limits claim 1 by including a faring process that determines fares valid for at least some of the instances in the set of instances of transportation and requiring that the availability process executes before the faring process.

Indeed, Lynch '094 discloses some type of faring process in the genetic algorithmic approach. However, Lynch '094, as the examiner acknowledges does not disclose to perform the availability process before faring. (Appellant contends that Lynch does not disclose availability at all). Nonetheless, the examiner relies on Hornick arguing that:

> **Hornick teaches a system/ method wherein seat availability is determined after a faring process (i.e. availability process is executed after a faring process), (col. 6, lines 44-62) At the time of the Applicant's invention, it would "... it would have been obvious to one of ordinary skill in the art to modify the system of Lynch'094 with the teaching of Hornick to allow a faring process to be executed prior to an availability determination (i.e. availability process). As suggested by Hornick, one would have been motivated to include this feature to maximize travel service provider revenue while accounting for the probabilistic and complex nature of demand. (Hornick: col. 2, lines 21-53)**

While Hornick indeed does discuss "reservation terminals," and arguably the combination of Hornick and Lynch '094 may suggest performing availability after faring, there is certainly no suggestion from Hornick to perform availability checking before faring, as in claim 34. To argue that Hornick suggests both would be to take contradictory interpretations of Hornick.

Moreover, Hornick is not a travel planning system but rather is a revenue management system. Hornick does not teach: "a system/ method wherein seat availability is determined after a faring process." The decision of when to perform the availability check is controlled by the travel planning system, which only Lynch '094 can be used to teach. However, Lynch '094 for

all of the reasons discussed above is silent on matters pertaining to seat availability checking and therefore the examiner cannot properly use the combination to teach either of the claims.

(6) Claim 14 is patentable over Lynch '094 in view of Slotznick (US 5,983,200).

Claim 14

Claim 14, which limits the travel planning system of claim 1 to require that ... the travel planning system processes scheduling and fare information, and the scheduling and fare information along with availability data are sent to an intelligent client for further processing and integration by the client is allowable over the combination of references at least because Lynch '094 does not teach the features of base claim 1 and Slotznick does not cure the deficiencies in Lynch '094.

(7) Claim 28 is patentable over by Lynch et al (US Patent No. 6,119,094) in view of Official Notice.

Claim 28

Claim 28 limits claim 1 requiring that probabilistic confidence bounds describing uncertainty in measurements of seat availability are placed on the quality properties. Claim 28 is allowable over the combination of Lynch '094 with official notice because the combination does not teach at least the features of base claim 1 and official notice does not cure the deficiencies in Lynch '094.

Conclusion

Appellant submits that claims 1-34 are allowable over the art of record and are proper under 35 U.S.C. 112, second paragraph. Therefore, the Examiner erred in rejecting Appellant's claims and should be reversed.

Respectfully submitted,

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Appendix of Claims

1. A travel planning system comprises:

a computer system, comprising:

a processor; and

a memory storing processes for executing on the processor, the processes, comprising:

a scheduling process to provide a set of instances of transportation that satisfy a user query; and

an availability process that accesses seat availability information from multiple sources of seat availability information, receives the instances of transportation and uses results from a first source of the multiple sources of seat availability information for a mode of transportation to determine a set of instances of transportation for which a seat is available from the received instances of transportation;

determines quality properties of the availability information from the first source of seat availability information, with the quality properties including at least one of confidence, precision and validity; and

determines, based on the quality properties, whether the first source of seat availability information is reliable, and if the results are not reliable, the availability process executes a second set of seat availability queries to the first source or a different one of the multiple sources of seat availability information based on the outcome of determining quality properties, to provide a second set of instances of transportation for which a seat is available.

2. The travel planning system of claim 1 wherein if the availability process determines that the first source of seat availability information is reliable, the availability process returns the results.

3. The travel planning system of claim 1 wherein to execute a second set of seat availability queries to the first source or a different one of the multiple sources the availability process makes multiple, sequential seat availability queries to the first source or a different one of the multiple sources of seat availability information.

4. The travel planning system of claim 1 wherein to execute a second set of seat availability queries the availability process makes multiple simultaneous seat availability queries to multiple, ones of the multiple sources of seat availability information.

5. The travel planning system of claim 1 wherein the first source or a different one of the multiple sources of seat availability information have differing fixed and marginal costs associated with obtaining information, including computation, communication, time, and monetary cost.

6. The travel planning system of claim 5 wherein the travel planning system controls costs by setting a threshold limit on the availability process to access the sources for at least one of the costs.

7. The travel planning system of claim 6 wherein the thresholds are timeouts or price limits.

8. The travel planning system of claim 7 wherein the availability process prioritizes queries to the first source or a different one of the multiple sources of seat availability information to remain under a specified cost limit.

9. The travel planning system of claim 1 wherein the first source or a different one of the multiple sources of seat availability information is a source of predicted availability information that generate replies with differing quality properties including at least one of freshness, confidence, precision, and validity.

10. The travel planning system of claim 1 wherein the availability process determines tradeoffs between the cost of a query and the properties of the response.

11. The travel planning system of claim 1 wherein the availability process:

speculatively determines the travel options using availability data that is determined to be low-quality data as though the data were high-quality data.

12. The travel planning system of claim 11 wherein speculatively determines, produces the low-quality, availability data, which are not returned from any external source of availability information, but are guessed or computed internal to the travel planning process.

13. The travel planning system of claim 11 wherein travel options produced from speculatively determining are used to decide what additional seat availability queries should be issued, what sources should be queried, what quality data are needed, or what cost to incur to get additional information.

14. The travel planning system of claim 1 wherein fare information is determined and the travel planning system processes scheduling and fare information, and the scheduling and fare information along with availability data are sent to an intelligent client for further processing and integration by the client.

15. A computer program product embodied on a computer readable medium for use with a travel planning system for determining availability of a seat for a mode of transportation, comprises instructions for causing a computer to:

receive a set of instances of transportation that satisfy a user query;

determine quality of a first set of seat availability information from a first source of availability information to guide a travel planning system to determine a subsequent set of instances of transportation for which a seat is available, and if the quality of the seat availability information is low, execute a second set of seat availability queries to the first source or a different source of seat availability information to provide a second set of seat availability information from the first source or the different source of seat availability information; and

produce from the second set of seat availability information and a set of the instances of transportation, a set of instances of transportation, for which a seat is available.

16. The computer program product of claim 15 further comprising instructions to:

send the second set of seat availability queries to a different higher quality source of seat availability information if the results from the first source are low quality.

17. The computer program product of claim 15 further comprising instructions to:

send multiple, sequential seat availability queries to multiple ones of the multiple sources of seat availability information, with at least one of the multiple ones of the multiple sources being predictor sources of seat availability information.

18. The computer program product of claim 15 wherein the multiple sources of seat availability information have differing fixed and marginal costs associated with obtaining information, including computation, communication, time, and charges and the program further comprising instructions to:

set a threshold limit to access the sources for at least one of the costs.

19. The computer program product of claim 15 wherein the multiple sources of seat availability information generate seat availability information with differing quality properties including at least one of freshness, confidence, precision, and validity.

20. The computer program product of claim 15 further comprising instructions to:

determine tradeoffs between the cost of a query and the properties of the seat availability information.

21. A method executed in a computer system for determining availability of a seat for a mode of transportation, comprises:

producing in the computer system a first set of seat availability queries, to send to a first source of seat availability information for a first set of instances of transportation;

evaluating in the computer system a quality measure of seat availability information received from the first source of seat availability information, to guide a travel planning system in determining a set of instances of transportation for which a seat is available by:

producing in the computer system a second set of seat availability queries, to send to a different source of seat availability information based on evaluating quality of the availability information to provide the set of instances of transportation for which a seat is available.

22. The method of claim 21 further comprising:

receiving the set of instances of transportation from a travel planning system in response to a user query.

23. The method of claim 21 further comprising:

sending the second set of seat availability queries to a different source of seat availability information if the results from the first source do not have a sufficient level of quality.

24. The method of claim 21 further comprising:

sending multiple, sequential seat availability queries to multiple sources that predict seat availability information.

25. The method of claim 21 wherein the sources of seat availability information have differing fixed and marginal costs associated with obtaining information, including computation, communication, time, and charges and the method further comprises:

setting a threshold limit to access the sources for at least one of the costs.

26. The method of claim 21 wherein the sources of seat availability information generate seat availability information with differing quality properties including at least one of freshness, confidence, precision, and validity.

27. The method of claim 21 further comprising:

determining tradeoffs between the cost of a query and the properties of the seat availability information.

28. The travel planning system of claim 1 wherein probabilistic confidence bounds describing uncertainty in measurements of seat availability are placed on the quality properties.

29. The travel planning system of claim 1 wherein actual seat availability queries are sent to a source of airline seat availability information and are selected to increase the number of available solutions found or to increase the likelihood that the availability of the desirable solutions has been verified with high confidence.

30. The travel planning system of claim 1 wherein multiple responses, which contain different seat availability information and/or quality properties are simultaneously maintained in the travel planning system.

31. The travel planning system of claim 1 further comprising:

a faring process that determines fares valid for at least some of the instances in the set of instances of transportation.

32. The travel planning system of claim 1 further comprising:

a faring process that determines fares valid for at least some of the instances in the set of instances of transportation for which a seat is available.

33. The travel planning system of claim 1 further comprising:

a faring process that determines fares valid for at least some of the instances in the set of instances of transportation and wherein the availability process is executed after the faring process.

34. The travel planning system of claim 1 further comprising:

a faring process that determines fares valid for at least some of the instances in the set of instances of transportation for which a seat is available, and wherein the availability process is executed before the faring process.

Evidence Appendix

None

Related Proceedings Appendix

None